

# National Science Foundation

## National Science Foundation Engineering Research Centers (ERC) Modification 1

Document Type:	Modification to Previous Grants Notice
Funding Opportunity Number:	07-521
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Dec 10, 2007 Letter of Intent Due Date(s) (required): February 02, 2007 Preliminary Proposal Due Date(s) (required): May 03, 2007 Full Proposal Deadline(s) (due by 5 p.m. proposer's local time): December 10, 2007 Invited Full Proposals
Funding Instrument Type:	Cooperative Agreement
Expected Number of Awards:	5
Estimated Total Program Funding:	\$16,250,000
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

### Eligible Applicants

Proposals may only be submitted by the following: Only U.S. academic institutions with undergraduate, masters, and doctoral engineering programs of sufficient depth and breadth appropriate to support the vision may submit proposals as the lead institution. Proposals must be submitted by the lead institution with sub-award budgets for partner domestic academic institutions. Separately submitted collaborative proposals are not acceptable and will be returned without review. PI Limit: The center director must be a tenured faculty member at the lead institution in an engineering department or may hold a joint appointment in an engineering department. The director's doctoral degree must be in engineering or an associated field of science; if the latter, she/he must have substantial career experience in engineering and a joint appointment in an engineering department

### Description

The goal of the Generation Three (Gen-3) Engineering Research Centers (ERC) Program is to create a culture of innovation in engineering research and education that links scientific discovery to technological innovation through transformational engineered systems research in order to advance technology and produce engineering graduates who will be creative innovators in a global economy. These ERCs will be at the forefront as the U.S. competes in the 21st century global economy where R&D resources and engineering talent are internationally and domestically distributed. Recognizing that optimizing efficiency and product quality is no longer sufficient for U.S. industry to remain competitive, these ERCs

will optimize academic engineering research and education to stimulate increased innovation. They will develop this culture of discovery and innovation through a symbiotic relationship between academic researchers, small innovative firms, and larger industrial and practitioner partners. These ERCs will build bridges from science-based discovery to technological innovation by focusing on research needed to realize transforming engineered systems. They will have the opportunity to partner with foreign universities and provide unique opportunities for research and learning collaboration that will prepare U.S. engineering graduates for leadership in innovation in a global economy. Their faculty will be diverse and talented individuals who will prepare diverse and talented domestic and international graduates who can function in a global world where design and production efforts cross national borders. Their transforming engineering education programs will strategically impart the capacity to create and exploit knowledge for technological innovation.

Link to Full Announcement

[NSF Publication 07-521](#)

<http://www.grants.gov/search/search.do?mode=VIEW&oppId=11486>

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National Science Foundation  
Graduate Research Fellowship Program Grant

Document Type:	Grants Notice
Funding Opportunity Number:	07-576
Opportunity Category:	Discretionary
Current Closing Date for Applications:	Nov 01, 2007 11/01/2007 Interdisc. Fields 11/02/2007 Mathematical Sciences; Computer + Info. Sciences and Engineering 11/06/2007 Social Sciences; Psychology; Geosciences 11/07/2007 Life Sciences 11/08/2007 Engineering 11/09/2007 Chemistry; Physics + Astronomy
Expected Number of Awards:	1100
Estimated Total Program Funding:	\$44,550,000
Award Floor:	\$40,500
CFDA Number:	47.076 -- Education and Human Resources
Cost Sharing or Matching Requirement:	No

Eligible Applicants

PI Limit: Refer to Section IV Eligibility Information.

Description

The National Science Foundation aims to ensure the vitality of the human resource base of science, technology, engineering, and mathematics in the United States and to reinforce its diversity by offering approximately 1,100 graduate fellowships in this competition. The

Graduate Research Fellowship provides three years of support for graduate study leading to research-based masters or doctoral degrees and is intended for students who are in the early stages of their graduate study. The Graduate Research Fellowship Program (GRFP) invests in graduate education for a cadre of diverse individuals who demonstrate their potential to successfully complete graduate degree programs in disciplines relevant to the mission of the National Science Foundation.

Link to Full Announcement

[NSF Publication 07-576](#)

[http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf07576](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf07576)

<http://www.grants.gov/search/search.do?mode=VIEW&oppId=14880>

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National Science Foundation  
Environmental Technology Grant

Current Closing Date for Applications: Sep 15, 2007 Submission Window Date(s): August 15, 2007 - September 15, 2007 August 15 - September 15, Annually Thereafter February 01, 2008 - March 01, 2008 February 1 - March 1, Annually Thereafter

CFDA Number: 47.041 -- Engineering Grants

Cost Sharing or Matching Requirement: No

Eligible Applicants  
Unrestricted:

#### Description

The Environmental Technology program provides support to develop and test new technologies across the activities in the field of environmental engineering. These include new devices and systems for more effective pollutant removal from air and water, as well as new technologies that minimize or avoid the pollutant generation inherent in older commercial and domestic processes and activities. Fundamental and basic research is solicited in establishing and understanding results in topical areas sought. The program also supports research on the development and refinement of sensors and sensor network technologies that can be used to measure a wide variety of physical, chemical, and biological properties of interest in characterizing, monitoring, and understanding environmental systems. The program emphasizes engineering principles underlying pollution avoidance as well as pollution treatment and remediation. Innovative production processes, waste reduction, recycling, and industrial ecology technologies are important to this program. The program supports research on innovative techniques to restore polluted land, water, and air resources. Contaminants of interest include endocrine disrupter, mercury, arsenic, pharmaceuticals, and personal care products, as well as traditional pollutants. Current areas of support include: Nanotechnology, environmental, health, and safety implications and applications Environmental cyber infrastructure Sensor and sensor network technologies as they relate to the natural ecosystem health Mitigation of human impacts Including those resulting in pollution of the environment (including the effects to water, land and air) Technologies as employed by phytoremediation and other methods to identify and understand the contamination product, control and elimination encouraged Treatment technologies for hazardous and solid waste Mitigation of environmental impacts of both

natural and man-made disasters Environmental Technology also interested in material accounting techniques as part of environmental cost effective and prompt and cost competitive reconstruction efforts following disasters (Also please see Environmental Sustainability for this topical area.) Along with the related Environmental Engineering and Environmental Sustainability programs, the Environmental Technology program fosters engineering research with the goals of: Reducing adverse effects of pollutant discharges from human activities Enhancing the quality and integrity of the natural environment that provides essential ecological services to humans The duration of unsolicited awards is generally one to three years. The average annual award size for the program is \$80,000. Please check the NSF Chemical, Bioengineering, Environmental and Transport Systems Division (CBET) Home Page for the two annual submission windows for unsolicited proposals. Small equipment proposals up to \$100,000 will also be considered and may be submitted during these windows. Any proposal received outside the announced dates will be returned without review. The duration of CAREER awards is five years. The submission deadline for Engineering CAREER proposals is in July every year. Please see the following URL for more information: <http://www.nsf.gov/pubs/2005/nsf05027/nsf05027.jsp> Proposals for Small Grants for Exploratory Research (SGER), Conferences, Workshops, and Supplements may be submitted at any time, but must be discussed with the program director before submission. Please refer to the Grant Proposal Guide (GPG), June 2007, (NSF 07-140) when you prepare your proposal. Chapter II, especially, will assist you. The GPG is available for download at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg)

Link to Full Announcement

[NSF Program Description 08-1179 -](#)

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=501030](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501030)

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=501030](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501030)

<http://www.grants.gov/search/search.do?mode=VIEW&oppId=14824>

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#### National Science Foundation Environmental Engineering Grant

Current Closing Date for Applications:	Sep 15, 2007 Submission Window Date(s): August 15, 2007 - September 15, 2007 August 15 - September 15, Annually Thereafter February 01, 2008 - March 01, 2008 February 1 - March 1, Annually Thereafter
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants  
Unrestricted

#### Description

In broadest terms, the field of Environmental Engineering is concerned with understanding the impacts of human activities on the natural environment and developing the scientific basis for solving, mitigating, or managing environmental problems caused by human activities. The field emerged as a separate engineering discipline during the middle third of

the 20th century, in response to widespread public concern about water and air pollution and increasingly extensive environmental degradation. However, its roots extend back to early efforts in public health engineering in the late 19th century and to ancient times with regard to urban drinking water systems. The Environmental Engineering program supports fundamental research and educational activities across the broad field it serves, with the goal of applying engineering principles to understand and reduce adverse effects of solid, liquid, and gaseous discharges into land, inland and coastal waters, and air that result from human activity and that impair the ecological and economic value of those resources. It fosters cutting-edge research based on fundamental science and four types of engineering tools - measurement, analysis, synthesis, and design. Proposals emphasizing enhancement of American Competitiveness are encouraged. Major areas of interest and activity in the program include: Developing innovative biological, chemical, and physical treatment processes to remove and degrade pollutants from water and air Measuring, modeling, and predicting the movement and fate of pollutants in the environment Developing and evaluating techniques to clean up polluted sites, such as landfills and contaminated aquifers, restore the quality of polluted water, air, and land resources and rehabilitate degraded ecosystems Along with its sibling environmental programs (Environmental Technology, Environmental Sustainability, and Energy for Sustainability), the program fosters environmental sustainability through the development of techniques to minimize or avoid generating pollution. Research may be directed toward improving the cost-effectiveness of pollution avoidance, as well as developing new principles for pollution avoidance technologies. Research for new and improved sensors of environmental conditions and innovative waste reduction and recycling processes also are important components of this program. The duration of unsolicited awards is generally one to three years. The average annual award size for the program is \$90,000. Please check the NSF Chemical, Bioengineering, Environmental and Transport Systems Division (CBET) Home Page for the two annual submission windows for unsolicited proposals. Small equipment proposals up to \$100,000 will also be considered and may be submitted during these windows. Any proposal received outside the announced dates will be returned without review. The duration of CAREER awards is five years. The submission deadline for Engineering CAREER proposals is in July every year. Please see the following URL for more information: <http://www.nsf.gov/pubs/2005/nsf05027/nsf05027.jsp> Proposals for Small Grants for Exploratory Research (SGER), Conferences, Workshops, and Supplements may be submitted at any time, but must be discussed with the program director before submission. Please refer to the Grant Proposal Guide (GPG), June 2007, (NSF 07-140) when you prepare your proposal. Chapter II, especially, will assist you. The GPG is available for download at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg)

Link to Full Announcement

[NSF Program Description 08-1440](#) -

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=501029](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501029)

<http://www.grants.gov/search/search.do?mode=VIEW&oppId=14830>

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National Science Foundation  
Environmental Sustainability Grant

Current Closing Date for Applications: Sep 15, 2007 Submission Window Date(s):  
August 15, 2007 - September 15, 2007 August 15 -  
September 15, Annually Thereafter February 01,

2008 - March 01, 2008 February 1 - March 1,  
Annually Thereafter

CFDA Number:

47.041 -- Engineering Grants

Cost Sharing or Matching Requirement: No

Eligible Applicants

Unrestricted

#### Description

The Environmental Sustainability program supports engineering research with the goal of promoting sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems - - which provide ecological services vital for human survival. The long-term viability of natural capital is critical for many areas of human endeavor. Research in Environmental Sustainability considers long time horizons and incorporates contributions from the social sciences and ethics. This program supports engineering research that seeks to balance society's need to provide ecological protection and maintain stable economic conditions. There are four general research areas which are supported: Industrial Ecology Green Engineering Ecological Engineering Earth Systems Engineering Topics of interest in Industrial Ecology include advancements in modeling such as life cycle assessment, materials flow analysis, input/output economic models, and novel metrics for measuring sustainable systems. Understanding materials flow and taking advantage of such understanding to substitute less toxic, longer lived materials are important areas for consideration. The effects of substituted materials on waste streams can be explored. Innovations in industrial ecology are encouraged. Engineering tools for estimating costs and ramifications of sustainable development must be developed, tested, and evaluated. In Green Engineering, research is encouraged to advance the sustainability of chemical processes, manufacturing processes, green building, and infrastructure. Many programs in the Engineering Directorate support research in environmentally benign manufacturing or chemical processes. The Environmental Sustainability program supports research that would affect more than one chemical or manufacturing process or that takes a systems or holistic approach to green engineering for infrastructure or green building. Of particular interest is the next generation of water and wastewater treatment that will dramatically decrease material and energy use, consider new paradigms for delivery of services, and promote longer life for engineered systems. Improvements in distribution and collection systems that will advance smart growth strategies and ameliorate effects of growth are research areas that are supported by Environmental Sustainability. Innovations in prevention and management of storm water, wastewater technology, indoor air quality, recycling and reuse of drinking water, and other green engineering techniques to support sustainable construction projects may also be fruitful areas for research. Ecological Engineering topics should focus on the engineering aspects of restoring ecological function to natural systems. Engineering research in enhancement of natural capital to foster sustainable development is encouraged. Many communities are involved in stream restoration, revitalization of urban rivers, and rehabilitation of wetlands that require engineering input. What is the fundamental engineering knowledge that is necessary for ecological engineering to function sustainability? Earth Systems Engineering considers aspects of large scale engineering research that involve mitigation of greenhouse gas emissions, adaptation to climate change, and other global scale concerns. All proposed research should be driven by engineering principles. Proposals should include involvement in engineering research of at least one graduate student, as well as undergraduates. Proposals emphasizing enhancement of American Competitiveness are encouraged. Incorporation of aspects of social, behavioral, and economic sciences is welcomed. The duration of

unsolicited awards is generally one to three years. The average annual award size for the program is \$100,000. Please check the NSF Chemical, Bioengineering, Environmental and Transport Systems Division (CBET) Home Page for the two annual submission windows for unsolicited proposals. Small equipment proposals up to \$100,000 will also be considered and may be submitted during these windows. Any proposal received outside the announced dates will be returned without review. The duration of CAREER awards is five years. The submission deadline for Engineering CAREER proposals is in July every year. Please see the following URL for more information:

<http://www.nsf.gov/pubs/2005/nsf05027/nsf05027.jsp> Proposals for Small Grants for Exploratory Research (SGER), Conferences, Workshops, and Supplements may be submitted at any time, but must be discussed with the program director before submission. Please refer to the Grant Proposal Guide (GPG), June 2007, (NSF 07-140) when you prepare your proposal. Chapter II, especially, will assist you. The GPG is available for download at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg)

Link to Full Announcement

[NSF Program Description 08-7643 -](#)

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=501027](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501027)

<http://www.grants.gov/search/search.do?mode=VIEW&oppId=14831>

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National Science Foundation  
Energy for Sustainability Grant

Document Type:	Grants Notice
Funding Opportunity Number:	PD-08-7644
Opportunity Category:	Discretionary
	Sep 15, 2007 Submission Window Date(s): August 15, 2007 - September 15, 2007 August 15 -
Current Closing Date for Applications:	September 15, Annually Thereafter February 01, 2008 - March 01, 2008 February 1 - March 1, Annually Thereafter
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

Eligible Applicants

Unrestricted

Description

The Energy for Sustainability program supports fundamental research and education in energy production, conversion, and storage and is focused on energy sources that are environmentally friendly and renewable. Most world energy needs are currently met through the combustion of fossil fuels. With projected increases in global energy needs, more sustainable methods for energy production will need to be developed, and production of greenhouse gases will need to be reduced. Sources of sustainable energy include: Sunlight Wind Biomass Hydrogen and alcohols are potential energy carriers that can be derived from

renewable sources. Research that generates enabling science and technologies for more efficient hydrogen and storage is supported by the program. Potential sources of hydrogen include conversion from biomass and from electrolysis, photolysis or thermolysis of water. Biomass is available from agricultural crops and residues, forest products, aquatic plants, and municipal wastes. In addition to hydrogen, biomass can be a source of liquid, solid, and gaseous fuels including biofuels such as ethanol. Fuel cells have the potential to convert fuels such as hydrogen and alcohols to electricity at high efficiencies and should play an increasing role in energy conversion. Critical components of low temperature fuel cells requiring additional research include catalysts, membranes, and electrolytes. Development of these components also requires fundamental research on the reaction and transport mechanisms at the catalyst and membrane electrolyte interface. Advances in these areas are needed to address key challenges in efficiency, durability, power density, and environmental impacts. The engineering aspects of fuel-cell design and operation also require further study in areas such as water and thermal management. Wind power is a growing source of electrical energy. Increased efficiency requires a fundamental knowledge of the interaction of wind with the blade structure. Understanding the fluid flow, and optimizing blade design are important aspects in developing more efficient wind generators. Photovoltaic devices have the potential to supply a significant fraction of electrical energy to the power grid. Although silicon-based materials have been most widely used, other semi-conducting materials and titanium dioxide also have potential. New materials and novel fabrication techniques for solar energy conversion are supported by the program. The duration of unsolicited awards is generally one to three years. The average annual award size for the program is \$100,000. Please check the NSF Chemical, Bioengineering, Environmental and Transport Systems Division (CBET) Home Page for the two annual submission windows for unsolicited proposals. Small equipment proposals up to \$100,000 will also be considered and may be submitted during these windows. Any proposal received outside the announced dates will be returned without review. The duration of CAREER awards is five years. The submission deadline for Engineering CAREER proposals is in July every year. Please see the following URL for more information: <http://www.nsf.gov/pubs/2005/nsf05027/nsf05027.jsp> Proposals for Small Grants for Exploratory Research (SGER), Conferences, Workshops, and Supplements may be submitted at any time, but must be discussed with the program director before submission. Please refer to the Grant Proposal Guide (GPG), June 2007, (NSF 07-140) when you prepare your proposal. Chapter II, especially, will assist you. The GPG is available for download at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg)

Link to Full Announcement

[NSF Program Description 08-7644 -  
http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=501026](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501026)  
<http://www.grants.gov/search/search.do?mode=VIEW&oppId=14832>

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National Science Foundation  
Emerging Frontiers in Research and Innovation Grant

Document Type:	Grants Notice
Funding Opportunity Number:	07-579



Opportunity Category:	Discretionary
Current Closing Date for Applications:	Apr 30, 2008 Letter of Intent Due Date(s) (required): September 25, 2007 Preliminary Proposal Due Date(s) (required): October 26, 2007 Full Proposal Deadline(s): April 30, 2008
Expected Number of Awards:	11
Estimated Total Program Funding:	\$22,000,000
Award Ceiling:	\$2,000,000
Award Floor:	\$1,000,000
CFDA Number:	47.041 -- Engineering Grants
Cost Sharing or Matching Requirement:	No

#### Eligible Applicants

Organization Limit: Proposals may only be submitted by the following: -Academic Institutions located in the U.S.: U.S. universities and colleges located in the U.S.  
 \*PI Limit: Principal Investigators (PI) must be at the faculty level or equivalent and the lead PI must have a primary appointment in an engineering department. The PI and at least two co-PIs, all from different disciplines and with funded time committed in the budget, must be listed on the cover page or on the budget page of the proposal.

#### Description

The Directorate for Engineering at the National Science Foundation has established the Office of Emerging Frontiers in Research and Innovation (EFRI) to serve a critical role in focusing on important emerging areas in a timely manner. The EFRI Office is launching a new funding opportunity for interdisciplinary teams of researchers to embark on rapidly advancing frontiers of fundamental engineering research. For this solicitation, we will consider proposals that aim to investigate emerging frontiers in the following two specific research areas: (1) Cognitive Optimization and Prediction: From Neural Systems to Neurotechnology (COPN), and (2) Resilient and Sustainable Infrastructures (RESIN). EFRI seeks proposals with transformative ideas that represent an opportunity for a significant shift in fundamental engineering knowledge with a strong potential for long term impact on national needs or a grand challenge. The proposals must also meet the detailed requirements delineated in this solicitation. INFORMATION WEBCAST: The EFRI Office plans to hold an information workshop on September 5, 2008, to answer any questions about the EFRI Office and this solicitation. Details will be posted on the EFRI website ([www.nsf.gov/eng/efri](http://www.nsf.gov/eng/efri)) as they become available.

#### Link to Full Announcement

[NSF Publication 07-579 -  
http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf07579](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf07579)  
<http://www.grants.gov/search/search.do?mode=VIEW&oppId=14993>